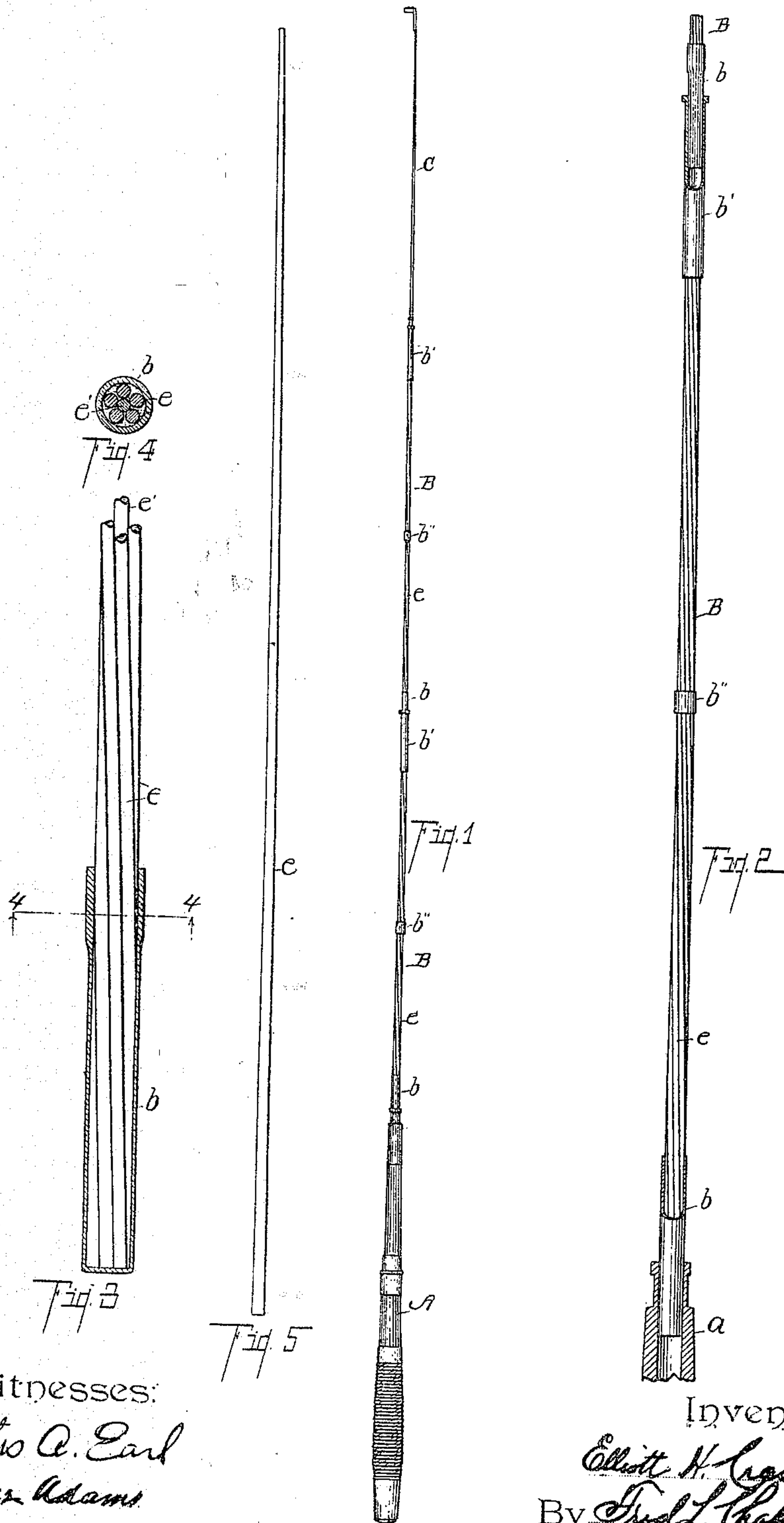


E. H. CRANE.
FISHING ROD.

APPLICATION FILED MAY 18, 1903.

NO MODEL.



Witnesses:
Otto A. Earl
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UNITED STATES PATENT OFFICE.

ELLIOTT H. CRANE, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO O. LE GRAND ALLEN, OF BENTON HARBOR, MICHIGAN.

FISHING-ROD.

SPECIFICATION forming part of Letters Patent No. 735,471, dated August 4, 1903.

Application filed May 18, 1903. Serial No. 157,630. (No model.)

To all whom it may concern:

Be it known that I, ELLIOTT H. CRANE, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Fishing-Rods, of which the following is a specification.

This invention relates to improvements in fishing-rods.

The objects of this invention are, first, to provide an improved fishing-rod of metal which is light and very elastic or resilient and at the same time strong and durable; second, to provide an improved fishing-rod of metal which has suitable and uniform elasticity or resiliency from end to end; third, to provide an improved metal fishing-rod made up of detachable sections which when united produce a rod of uniform elasticity or resiliency from end to end; fourth, to provide an improved fishing-rod which is not top heavy or out of balance; fifth, to provide an improved fishing-rod of metal which is simple in its construction and economical to produce. Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation view of my improved fishing-rod. Fig. 2 is an enlarged detail view, partially in section, of one of the sections B, showing the structure thereof. Fig. 3 is an enlarged detail view showing the arrangement of the rods *e e'* and means of securing them in proper relation to each other. Fig. 4 is a detail cross-sectional view taken on a line corresponding to line 4-4 of Fig. 3. Fig. 5 is an enlarged view of one of the rods *e*.

In the drawings the sectional view is taken looking in the direction of the little arrows at the ends of the section-line, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the draw-

ings, the handle A of the rod is preferably formed of wood or any suitable material to provide a suitable grip. The rod illustrated is made up of sections B B and C, which are secured together by suitable pin-and-socket joints. The sections B are made up of a plurality of small steel rods *e*, which are twisted or spirally arranged about a central rod *e'*. The rods *e* are held in position about the rod *e'* by ferrules *b b'*, into which they are inserted. I preferably retain the rods in the ferrules and in the proper relation to each other by soldering, as appears in Fig. 4. The rods *e e'* are uniformly tapered toward the top. Midway of the sections B, I place a ferrule *b''*, which is fitted snugly in place. This assists in retaining the rods in position and prevents movement upon each other. The ferrules *b'* are provided with sockets to receive the ferrules *b* of the next succeeding sections. The rods *e* entering into each section are formed with a taper uniform with that of the adjacent sections, so that uniformity of resiliency or elasticity is secured throughout the rod.

The tip-section C of the rod is formed of a single tapered rod and is provided with a suitable runner at the end. The tip C is also formed with a uniform taper, so that the rod has a perfect balance. By thus forming and arranging the parts I secure a rod of great resiliency. The balance also is thus nicely adjusted.

While my improved rod is particularly adapted for use as a sectional rod, it may be formed continuously from end to end.

I have illustrated and described my improved metal fishing-rod in the form preferred by me on account of its simplicity and economy of manufacture. I am aware, however, that it is capable of very great structural variation without departing from my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fishing-rod, the combination of a suitable grip-section A; sections B, each section consisting of a central tapered steel rod *e'*; a plurality of tapered steel rods *e* spirally arranged about the same; ferrules *b b'* into which the ends of said rods are rigidly se-

cured; ferrules *b'* centrally arranged on said sections; and a tip-section C formed of a tapered steel rod, the taper of said rods forming each section being uniform with that of the rods of the adjacent sections.

2. In a fishing-rod, the combination of a suitable grip-section A; sections B, each section consisting of a central tapered steel rod *e'*; a plurality of tapered steel rods *e* spirally arranged about the same; ferrules *b b'* into which the ends of said rods are rigidly secured; and a tip-section C formed of a tapered steel rod, the taper of said rods forming each section being uniform with that of the rods of the adjacent sections.

3. In a fishing-rod, the combination of sections consisting of a central tapered steel rod, a plurality of tapered steel rods spirally arranged about the same; ferrules into which the ends of said rods are rigidly secured, said ferrules being adapted to form joints for said sections; and a tip-section formed of a single tapered steel rod, the taper of the rods forming each section being uniform with that of the adjacent sections.

4. In a fishing-rod, the combination of sections consisting of a central tapered steel rod, a plurality of tapered steel rods spirally arranged about the same; ferrules into which the ends of said rods are rigidly secured; and a tip-section formed of a single tapered steel rod, the taper of the rods forming each section being uniform with that of the adjacent sections.

5. In a fishing-rod, the combination of sections consisting of a central tapered steel rod, a plurality of tapered steel rods spirally arranged about the same; and ferrules into which the ends of said rods are rigidly secured, said ferrules being adapted to form joints for said sections.

6. In a fishing-rod, the combination of sections consisting of a central steel rod, a plu-

rality of steel rods spirally arranged about the same; and ferrules into which the ends of said rods are rigidly secured, said ferrules being adapted to form joints for said sections.

7. In a fishing-rod, the combination of sections consisting of a central tapered steel rod, a plurality of tapered steel rods spirally arranged about the same; and ferrules into which the ends of said rods are rigidly secured.

8. In a fishing-rod, the combination of sections consisting of a central steel rod, a plurality of tapered steel rods spirally arranged about the same; and ferrules into which the ends of said rods are rigidly secured.

9. In a fishing-rod, the combination of sections consisting of a central tapered steel rod, a plurality of tapered steel rods spirally arranged about the same; means for retaining said rods in position; and means for securing said sections together.

10. In a fishing-rod, the combination of sections consisting of a central steel rod, a plurality of steel rods spirally arranged about the same; means for retaining said rods in position; and means for securing said sections together.

11. In a fishing-rod, the combination of a central tapered steel rod, a plurality of tapered steel rods spirally arranged about the same; and means for retaining said rods in position.

12. In a fishing-rod, the combination of a central steel rod, a plurality of tapered steel rods spirally arranged about the same, and means for retaining said rods in position.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

ELLIOTT H. CRANE. [L. S.]

Witnesses:

A. IRENE ADAMS,
OTIS A. EARL.